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ABSTRACT

A team of library and computing staff was used to develop an Internet training program at the University of Limerick (Ireland). Its objectives were to present the Internet as both an information source and publishing medium, and to train faculty and staff in the effective use of these applications. The team adopted an iterative approach to the program by incorporating review and revisions at the end of each training cycle. This paper includes information on the following program components: research methods; training methods; training programs; facilities and documentation; program assessment and redesign; training issues; course participants; the trainers; team training; and implications for information professionals. The program has resulted in clients' increased awareness of the Internet, the World Wide Web, and ULiX (University of Limerick Information Exchange) service. Faculty are becoming aware of the resource available and the skills needed to identify and access them, and have begun to request similar courses for students and visiting groups. The university now has a functioning cohort of information providers who are using the Internet to publish information to the campus and to the world. (Author/SWC)

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An Iterative Development of a Training Programme in the Use of the Internet as an Information Source and Publishing Mechanism

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U.S. DEPARTMENT OF EDUCATION
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An iterative development of a training programme in the use of the Internet as an information source and publishing mechanism

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Abstract: *A team of library and computing staff was used to develop an Internet training programme at the University of Limerick. Its objectives were to present the Internet as both an information source and publishing medium, and to train faculty and staff in the effective use of these applications. The team adopted an iterative approach to the programme by incorporating review and revisions at the end of each training cycle.*

Keywords: Internet, training, information source, publishing

1. Introduction

The purpose of this paper is to assess the development of an Internet training programme for the staff and faculty at the University of Limerick. During an eighteen month period from the Spring of 1995 a three-cycle programme concentrated on raising awareness and developing proficiency in using the Internet as a source of information, and on training end-users to become independent information publishers on the university's Web site. The programme evolved as a response to these needs and as a result of a general demand for information about, and access to, the Internet by staff and faculty.

The University of Limerick has a student enrolment of 8000 and employs 642 people. The campus is fully networked and provides access to information sources, and communication and document creation software. The Information Technology Department (ITD) and Library and Information Services (LIS) are two units of the Information Systems and Services Division (ISSD) with responsibility for Internet services. Prior to the development of this training programme, staff from both areas were involved in two related projects. The earlier was the design and development of ULiX (University of Limerick Information Exchange), a Web-based information exchange or publishing mechanism known as a CWIS or Community Wide information System. These systems are defined as 'a means of disseminating information electronically to the people within a single institution'' (UCISA 1995). It is primarily a communication mechanism that acts as an access point to documents available via the World Wide Web, and as a means of publishing by and to the local community and to the world. It also serves as an Internet on-ramp for faculty, staff and students. The second project, EDUCATE (End-User Courses in Information Access through Communication Technology) was a CEC Libraries Programme project to produce a self-paced user education course in the selection and use of information sources. The project had a particular focus to deal with online information sources, and included real time online demonstrations and exercises.

Both projects were organised on a cross disciplinary team basis and included staff from ITD and LIS departments. They were of benefit to the development of the Internet training programme as they provided an operational model, experience of IT and library staff working together, and knowledge of the Internet. It is also significant that they established a role for librarians in the development of Internet services at the university.

2. Research methods

We were unsure as to the best method for delivering such a training programme, as the technology was developing at a rapid pace and we were in many cases still trying to come to terms with it ourselves. The literature offered little guidance as to the effective delivery of Internet training in general or specifically with regard to an academic community. We decided to adopt an action research methodology, a style of research common in the social sciences and classroom-based research. This method advocates diagnosing a problem and trying small scale interventions in the context of a specific real world situation. Such modifications or interventions are constantly monitored within the ongoing situation with the objective of improving practice.

3. Training methods

The team approach ensured that all courses were offered jointly by the training section of ITD, the College Librarians of LIS and staff of the ULiX office. Each course had at least two presenters, one from each department, and a minimum of three demonstrators assisting clients as needed. From the outset the courses were designed to maximise client participation with short demonstrations interspersed with hands on and exercise sessions. Courses were scheduled for three hours with a half hour break for tea or coffee. This break provided a useful opportunity to assess client response and to deal with individual difficulties. We limited class size to sixteen, one person per PC. Where possible we used the technology to deliver the training utilising MS PowerPoint presentations and purposely designed pages with live links projected onto a 30" monitor. Such an approach was open to system failures but we sought to use these occurrences to teach clients how to deal with the problems encountered in accessing the Internet. The courses were presented in a casual and informal manner so as to put participants at their ease, as many were uncomfortable appearing as novices. Courses were advertised widely throughout the university using print and electronic media. The logistics of bookings and scheduling were handled by the training section.

4. Training programmes

Our objectives in offering an Internet training programme were threefold. At the outset we aimed to raise the level of Internet awareness among the university community, specifically of its academic applications. Having established a reasonable level of awareness, our more specific targets of utilising the Internet as an information source and as a publishing mechanism were pursued. To deliver such objectives three courses were required. An introductory session, in the initial cycle, was quite informal with participants free to drop in at any stage during the session for a cup of coffee, followed by a one-to-one guide to Netscape and selected resources, and an opportunity to stay and browse at their own pace. An intermediate course covered information searching and more advanced Internet features such as FTP and Telnet. An advanced course dealt with home page creation covering information structuring, style guide and basic HTML.

Of the three training cycles conducted so far, the first cycle concentrated on introductory cafe type sessions. The second and third cycles continued to offer this but our focus was on the development of intermediate and advanced courses. Each cycle was followed by team review and revision where necessary. During the development of the programmes we gradually moved from a tool-based or systems training approach to a more user-focused one. This was due in part to developments in the technology, which saw a more integrated approach using one browser to access many applications, and to a greater emphasis on use or application aspects in the courses. The multidisciplinary team approach to delivery of Internet training brought together these two approaches. The ITD staff had valuable experience in training in and use of computers, and an extensive range of software packages. Librarians had a greater user and usage contribution and brought knowledge of the information searching practices, user needs and the value of such applications and sources to the university community. We faced the challenge of integrating both of these approaches into one unit during the three cycles of programme development.

5. Facilities and documentation

All courses were held in a purposely designed PC teaching lab and access to such a facility greatly facilitated delivery of the programme. However we were in competition with undergraduates for access to the room and access times were not sufficient to meet our needs.

We prepared paper-based documentation to support the courses in the initial programme cycle. These comprised an IT manual, subject-based site lists and style guides for document creation. These took up a considerable amount of time to prepare and very soon needed revision as a result of technical advances and changes in course content. We did not have the time to undertake such work and were conscious that we were in many cases recreating material already available on the Internet. Instead we moved to creating purposely designed Web-based training pages that would incorporate our course structure with useful Web sites and lists. This work is still under construction and will, when completed, be retained as a permanent feature of ULiX.

6. Programme assessment and redesign

Each training cycle finished with a review meeting in which all involved were encouraged to review the courses so as to improve the next cycle. The introductory cafes of cycle one were considered too informal and lacking in content. We were emphasising the idea that the Internet was a fun concept and the jump from this to the serious applications in the intermediate course was too great.

It was replaced in cycle two with a more formal three hour course that provided a detailed presentation of Netscape features and demonstrations of FTP and Telnet. Again ample time was given for participants to spend time browsing. Our objective had been to place greater emphasis on the value of the Internet to the university

community: however the formality and expanded content were too complex for beginners. Following the second cycle we made further revisions, making it shorter and less formal but retaining as much as content as users could handle. The changes made in the introductory course had a direct effect on the intermediate course, decreasing or increasing the amount of coverage given to FTP, Telnet, customising Netscape and so on. In the first cycle a second theme of the intermediate course was the use of the Internet as an information source and this aspect grew in significance in subsequent cycles. Initially we sought to give this a strong subject-based orientation by offering subject-based sessions, e.g. Internet for Engineering, on topics corresponding to the main subject areas of the university.

This approach was not as successful as we had hoped. It was difficult to get academics scheduled into appropriate subject groups, and there was often such a spread of topics and sources within each subject that the description and assessment of many sources were irrelevant to much of the class. Although we spent a great deal of time assessing sites, and creating annotated subject lists and transferring this knowledge, the participants did not build up real search skills for themselves. We revised this course to one that offered a generic approach to information searching. We concentrated on how information was organised on the Internet; what could be expected from it; how best to use subject catalogues, discussion groups and search engines; finding people; and how to keep up to date. Following these revisions participants had a greater awareness of the value and pitfalls of the Internet as an information source, and how best to access it.

The advanced course required least revision, with the addition of such features as how to publicise your pages, a greater range of page templates, and images and photographs. We simplified the procedure for FTPing locally created pages on to the server and directing participants to HTML verification services. This course will require some modification as we intend to make an updated editor available shortly. In addition we now have a demand for a more detailed course dealing with features like Java, tables and sound. As the demand for information on many of these advanced aspects of Web publishing comes from individuals we are considering offering a clinic or question and answer style session with a panel of 'experts'.

7. Training issues: the Internet as an information source

The design and organisation of these courses raised specific issues relating to training in using the Internet as an information source. As with training in using other electronic information sources we focused on search strategies, Boolean logic and search engines. It was not enough to teach how the Internet works: in addition we needed to develop an understanding of the nature of information on the Web. There is so much hype and publicity about the vast information superhighway that it is important to help participants to understand what it is and is not. One technique we used was to contrast the reality of the Web as an information source with the media image. It was important to assist participants to discriminate between information resources, to understand what is being searched, how various search engines work and what levels of quality can be expected, and to warn of the instability of many sites. Another technique used was to compare it with other information sources, both print and electronic. The Internet offers additional information source to those already available, and it was important to remind people of these and assist them to choose the source most appropriate to each requirement. In addition the Internet in its own right offers access to a vast range of new information products and services. We were surprised at the extent to which we needed to teach critical thinking skills in using the Web as an information source. These greater choices and options demand more effective search skills, search software knowledge and source evaluation techniques than ever before. Yet all of this is presented in an easy-to-use and sophisticated mode that belies the complexity and demands of the medium. The general image of the Internet presented in the media is of an easy to use medium, and participants often wondered why it was not. Ease of use was strongly correlated with previous familiarity with Windows-based software.

The change from a subject-based to a more transferable search skills approach to training in use of the Internet as an information source was taken in part as a response to local conditions. We still perceive a need to incorporate a subject-based element in such a training programme, perhaps as an additional course following the generic searching course. There is a need to provide greater linkages with other information skills training courses, and to put more effort into presenting the Internet as an additional information source and as a means of accessing local and remote databases.

8. Training issues: Internet as a publishing mechanism

From the outset we sought to use the training programme to develop a cohort of information providers who would in time manage various pages on the university's official server ULiX. At each level of training we promoted the Internet as both an information source and a publishing medium, and that participants could be both users and publishers of information. We would facilitate either or both options: the choice was with each individual.

Initially participants were most concerned with the apparent difficulty in mastering HTML and FTP. The advanced course covered these basic skills, and with regular support and back up from the ULiX office many gained an acceptable proficiency. It was more difficult to get participants to focus on the issues of information management, although these in the long run proved more challenging. We emphasised the need to put a considerable effort into how they wished the information to be used, to focus on the needs of their potential readers, to adopt good quality style and design standards, and to update and publicise their pages. Thus in addition to the

technical skills needed to create Web pages, information providers needed basic skills in Web writing, editing and publishing. Many participants were enthusiastic to 'put up a page' and often lost interest at that stage. It was a challenge to promote the benefits of the Internet as a publishing medium to carry people past this stage.

The Internet offers extensive opportunities for the academic community to publish a wide variety of information both to an internal and external market. Participants were slow to identify many of these applications. We made a conscious effort to present specific examples suitable to this community, initially from external universities and later using internal examples. ULiX is now used to publish a wide range of documents including courseware, policy documents, minutes, newsletters and research project material.

At this stage we are encountering legal and policy issues, and have drafted policy statements governing electronic publishing and information providers for adoption by the university. We are also encountering a growing demand for training in advanced features of Web publishing. To provide training for these aspects and to sustain continued use of the Internet as a publishing mechanism, we are planning a series of seminars to support and enhance the contribution of local information providers.

9. Course participants

All participants were self-selecting and attended the courses out of interest, often as a result of publicity on TV, in newspapers and magazines, or as a result of general presentations on the ULiX service. They were keen to try out the medium themselves to experience 'surfing the net'. A minority had grasped the implications of the Internet as an information source and publishing mechanism, and the applications it could have for themselves, their departments, professional associations and research groups. This understanding grew following attendance at the introductory courses or ULiX presentations and provided the market for the intermediate and advanced courses. It was significant that participants wanted to build up skills in Internet searching and publishing themselves rather than use an intermediary. Demand for these courses was high: over 300 initial bookings were made and 175 participants eventually attended an Internet training course. These were drawn in equal proportions from faculty and staff, and from both technical and non-technical areas. Indeed there was a strong demand from Informatics and Computing faculty for intermediate and advanced courses. Initially demand was greatest for introductory courses but this has waned somewhat as demand for the intermediate and advanced courses continues to rise. Results of a survey of participants will be available at the conference.

10. The trainers

The trainers for these courses were drawn from either a computing or library background. The computer training staff had extensive experience in end-user training in a wide variety of personal productivity tools, and would have worked with many of the participants previously. They were comfortable with their training role and in using technology to deliver training. The librarians also had experience in providing end-user training and in delivering information skills courses. However these activities only comprised part of their work and were concentrated into short periods of time. Although most had previous teaching experience at school or university level, all described themselves as uncomfortable with the training role. In particular they were uneasy in working with groups, preferring to work on a one-to-one basis with clients. In addition they were not skilled in using technology to present their segments of the course.

All trainers became involved as a result of a convergence of interests. ULiX staff required such courses to generate awareness of the service and to train self-sufficient information providers. Computer training staff were aware of a growing demand for some Internet training from faculty and staff. The librarians were exploring the Internet as an information source in subject-based groups with colleagues from other Irish universities in preparation to demonstrating it as an information source. However the programme was started from the ground up on a trial basis by individuals working in a voluntary team, as we realised that we could more effectively and easily develop such courses together. Senior management was not involved in the programme either at initiation or development, and work in this area was never specifically referred to or acknowledged.

All the trainers indicated that they benefited from the working on the programme. The computer training staff and college librarians developed a greater awareness of ULiX as an access point for Internet resources. Computer training staff did not find it difficult to develop the skills needed in using Internet applications, and found it less difficult and time consuming than many other software packages. Indeed during the course of the programme Internet access became standardised into one browser and that task became even simpler. They learned to incorporate a greater use and user orientation into the course rather than a systems approach. The librarians had to build up computing and Internet skills in addition to developing some knowledge of the resources and the search tools available. Assessing a growing number of search engines, how to use them and what exactly each one searched was an important issue. The very growth in the range and quality of the resources becoming available on the Internet during the period provided an additional burden. The librarians also developed skills in MS PowerPoint and using specially designed Web pages to deliver course information. This programme forced them to learn the skills needed in other areas of their jobs to demonstrate effectively the range of electronic products being made available on campus during this period. The computing training staff did not spend a lot of time in preparation, and courses could be rerun without much rechecking of sites, but they were involved in every course so delivery time was high. The librarian's involvement was concentrated in the interme-

diate section, where the focus was on searching and a great deal of time was needed in preparation, especially in relation to the time spent on delivery. The ULiX staff were involved in all courses, either making presentations on the service or presenting the information management and style guidelines elements of the advanced course. In addition they assisted in course and review organisation, and provided support for the practical hands-on aspects of all courses.

11. Team training

We used a team training structure to deliver these courses, due in part to local factors rather than in any belief that it was the best method. The ISSD structure, based on a converged IT and library model, had prior to the Internet projects little real convergence apart from senior management. The use of a team approach to develop the university's Web site was continued to its presentation to the community and to the training programme itself. There was a realisation that together we could offer a more effective and useful programme than competing with each other. Such a team training approach was beneficial in that it provided an opportunity to create new working and training relationships based on shared knowledge and professional resources.

Team management was informal and based on the voluntary participation of all members. Group meetings were augmented with one-to-one meetings used to encourage members, identify difficulties and suggest solutions. In these regular review sessions individuals had an opportunity to learn form each other, and to share their views on content and training methods. Many areas of benefit emerged and information was exchanged regarding equipment, training skills, information sources and search skills. This forced all of us to acknowledge contributions and views other than our own. Indeed, bringing different views together often led to greater analysis and adoption of new solutions. The iterative process was liberating in that we could try out different approaches without any group or individual becoming possessive or defensive. It gave individuals and the team an environment in which to consider and adopt changes and improvements in a natural and non-threatening manner. In this way clients received a more complete and valuable programme, and trainers were able to develop individual skills and a greater appreciation of the range of contributions needed.

The team approach was not without its disadvantages. There were considerable differences in skills, attitudes, motivation and working style between individuals, and in particular between the computing and library elements of the team. There was also the now almost traditional power imbalance between the technical and information management approach to contend with. There was a lack of trust and openness between the two groups, and differences in approach and methods were often not articulated or confronted by the group. Initially the team experience may have reinforced stereotypes and hindered co-operation. Although working together has resolved some of these difficulties we still need greater clarity, understanding and acceptance of the knowledge, and the contribution of each group. Working in a team without the more familiar authoritative decision making mechanisms required skills unfamiliar to the team participants. We need to develop improved team skills so as to foster greater role negotiation among members.

12. Implications for information professionals.

Much has been written on the implications of the growth in electronic information for the role and indeed the very future of the information professional. Internet and Intranet development towards a standard interface for accessing a vast range of resources, legacy and new databases, and communications mechanisms is a significant milestone in that debate. Our experience in presenting the Internet as a publishing mechanism and an information source provides some pointers for the evolving role of the information professional.

The greatest difficulty among information professionals is one of role perception and attitude. There may not be a great awareness outside of the profession of the contribution we have to make: however, this is not an insurmountable problem. Though it required some effort we were successful in securing an equal role with our computing colleagues in the Internet training programme, and course participants accepted our role without surprise or difficulty. I believe far greater difficulties lie in our own attitudes and in a serious lack of confidence in the value of our contribution. Librarians tended to accept the technology in a submissive manner and seem unable to challenge the IT professionals on equal terms. We need to realise that information management, and organisation and information search skills and manipulation, are the crucial issues facing the electronic information world; not the technology. The technology is getting easier to use and is solving its own problems while the information problems are growing at a rapid rate. Clearly the IT focus is one of presenting tools and applications rather than use and value. It is up to the information professionals to realise this, and to present and deliver an alternative approach to electronic information creation, selection, acquisition and use. Once the initial technical mystery has dissipated, clients quickly grasp the value and need for information management input and appear to have no reservations as to our role in this.

We cannot assume that out traditional clients will turn to the library for such support. The information market place is an increasingly crowded one and technology facilitates direct end-user access. Our training courses should be developed in line with best educational practice and validated as appropriate. Our services need to be targeted to satisfy user requirements, both perceived and unrealised and delivered to commercial standards. As a matter of urgency we must develop or obtain access to promotion and marketing skills, and actively market our services in professional business like manner.

With the emergence of a greater range of resources, multiple access points and greater variety in pricing and delivery options, our clients require more training and support than previously. However our clients, both corporate and individual, need support and training as information providers and publishers, not just as consumers. We need to train and support them in identifying the full spectrum of their information needs and in choosing the routes most suited to resolving them.

It is essential that information professionals develop additional skills as a matter of urgency. We need to develop high levels of competency in standard information creation and manipulation software packages, so that we have a confidence in dealing with the technologies and the technologists. We need to acquire professional presentation and training skills to the highest level. We need to stay abreast of current developments in the IT and electronic information areas as a matter of priority.

These new services and skills must not be viewed as additional extras to our existing workloads, but as essential requirements to move our library services into the emerging electronic information era. We cannot afford to wait for new generations of information professionals to emerge, but must train and retrain now and integrate such skills and services into our daily working lives.

13. Conclusion

All team members saw the future in terms of considerable change for Internet training and in a broader sense. Clearly the Internet technology is developing itself and in the longer term there will be issues concerning the use of the Web to support clients in terms of online training and one-to-one support. As the Internet emerges as a central access point, we need to focus on how we will integrate it with other information sources, both electronic and paper-based, and on how this will impact on end-user training and library services.

In the short term we are considering the development of more modular skills-based units with greater use of support material available online and in print. There is some divergence among the trainers as to whether this could or should be targeted on a subject basis, or whether the generalist approach should be retained. As more resources become available in this medium a subject focus may be necessary in some of the modules. It is likely that over time the Internet will become an element in a broader information skills programme which may be rooted in the general student curriculum, as well as being available to new staff and faculty. We intend to make greater use of the ULiX structure to create programmes and modules, to provide documentation and to gain feedback from participants.

The Internet training programme at the University of Limerick was a useful process in many aspects. That it was an iterative or action research-based approach allowed us the freedom to develop the programme on a trial and error basis, and in so doing to develop new skills. Working in a team training environment facilitated cross-discipline working relationships and knowledge transfer. It was the first step in dealing with an information future that we know will change and develop rapidly in the short term. The programme has however given us a mechanism and a direction so that we can adapt to those changes. The programme was beneficial in that awareness among our clients of the Internet, the Web and the ULiX service has grown. Faculty are becoming aware of the resources available and of the skills needed to identify and access them, and have begun to request similar courses for students and visiting groups. The university now has a functioning cohort of information providers who are using the Internet to publish information to the campus and to the world.

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